

CLAIMS

What is claimed is:

1. A transaction authentication card, comprising:
 - a biometric sensor for sensing a biometric feature of a user;
 - a memory;
 - a processor for retrieving stored biometric data from the memory, the processor having a fingerprint matching algorithm for comparing a biometric feature of a user with the stored biometric data; and
 - a wireless transmitter capable of generating wireless signals of two different frequencies, wherein a wireless signal is transmitted on a one-to-one validation of the biometric feature.
2. The transaction authentication card of Claim 1, further comprising a loop antenna, wherein the wireless transmitter is a radio frequency transmitter.
3. The transaction authentication card of Claim 2, wherein a frequency of the radio frequency transmitter is between 1 KHz and 999 GHz.
4. The transaction authentication card of Claim 3, wherein the wireless transmitter is an infrared transmitter.
5. The transaction authentication card of Claim 1, wherein the wireless signal is formatted as a human interface device (HID) signal.
6. The transaction authentication card of Claim 5, wherein the human interface device signal is compatible with Mifare.
7. The transaction authentication card of Claim 1, further comprising a power supply.

8. The transaction authentication card of Claim 7, wherein the power supply is rechargeable.
9. The transaction authentication card of Claim 7, wherein the power supply is a battery or capacitor.
10. The transaction authentication card of Claim 1, wherein the wireless signal is encoded.
11. The transaction authentication card of Claim 1, further comprising a multicolor light emitting diode.
12. The transaction authentication card of Claim 1, wherein the multicolor light emitting diode indicates a first color for a good read and a second color for a low battery.
13. The transaction authentication card of Claim 12, wherein the multicolor light emitting diode indicates a third color for a state of enrollment.
14. The transaction authentication card of Claim 1, wherein the transaction authentication card is used with a financial transaction terminal or an automated teller machine terminal.
15. The transaction authentication card of Claim 1, wherein the transaction authentication card is stand alone and performs self authentication, self verification, and self enrollment.
16. The transaction authentication card of Claim 1, further comprising a telescopic antenna coupled to the transmitter.

17. The transaction authentication card of Claim 1, wherein the memory stores biometric data for multiple users or multiple biometric data for a single user .
18. The transaction authentication card of Claim 1, wherein data sent by the wireless transmitter is encrypted.
19. The transaction authentication card of Claim 1, wherein the transaction authentication card provides more than one biometric for verification.
20. The transaction authentication card of Claim 1, wherein the biometric sensor is on a front side of the card and wherein an image is formed on a back side of the card.
21. The transaction authentication card of Claim 1, wherein the card is used for access control, financial transactions, security transactions, government control, airline security, passport ID, and driver's license or authentication.
22. The transaction authentication card of Claim 1, further comprising a display for showing an image downloaded by a user.
23. The transaction authentication card of Claim 22, wherein the image is a photo id.
24. The transaction authentication card of Claim 22, wherein the image is text.
25. The transaction authentication card of Claim 1, further comprising an alphanumeric keypad membrane for personal identification entry.
26. The transaction authentication card of Claim 1, wherein the wireless transmitter is an RF transmitter that operates between 1 KHz and 999 GHz.

27. The transaction authentication card of Claim 26, further comprising an RF receiver that is capable of receiving a signal between 1 KHz and 999 GHz.

28. The transaction authentication card of Claim 1, further comprising one or more batteries that supply power to the biometric sensor, the memory, the processor, and the wireless transmitter on the card.

29. The transaction authentication card of Claim 1, wherein the card has a portable database and does not require an external source for biometric enrollment or verification.

30. The transaction authentication card of Claim 1, wherein the processor uses industry standard minutia points for verification.

31. A method for providing limited access, comprising the steps of:
placing a transaction authentication card within proximity of a limited access control device;
entering biometric input through a sensor located on the transaction authentication card; and
transmitting a first wireless signal of a first frequency and a second wireless signal of a second frequency in response to authentication of the biometric input,
wherein the transaction authentication card communicates with a limited access control device through wireless communications,
wherein a visual indicator of the transaction authentication card provides a visual indication of authentication.
32. The method of Claim 31, wherein the wireless communications are infrared communications.
33. The method of Claim 31, wherein the wireless communications are radio frequency communications.
34. The method of Claim 31, further comprising enrolling a user on the transaction authentication card.
35. The method of Claim 34, wherein the user places at least one finger on a sensor pad on the transaction authentication card for enrollment and/or use.
36. The method of Claim 34, wherein the step of enrolling occurs through a universal serial bus connection between the transaction authentication card and the limited access control device.
37. The method of Claim 34, wherein the step of enrolling occurs through wireless

communications between a universal serial bus connection between the transaction authentication card and the limited access control device.

38. The method of Claim 31, further comprising changing the color of a light emitting diode on the transaction authentication card to indicate a processing state of the transaction authentication card.

39. The method of Claim 38, wherein the processing state is a good read.

40. The method of Claim 38, wherein the processing state is a low battery.

41. The method of Claim 38, wherein the processing state is successful enrollment.

42. A transaction authentication card, comprising:

- a body in the general form of a rectangular solid having a substantially hollow interior, the body measuring between 1 to 5 inches on a first side, 1 to 4 inches on a second side substantially perpendicular to the first side, and 1/8 to 1/2 inch on a third side substantially perpendicular to the first and second sides, the body being formed of impact plastics.

- a fingerprint sensor for sensing minutia points of a fingerprint of a user, the fingerprint sensor being mounted to an inside of the body such that a sensing portion of the fingerprint sensor is exposed through an opening in the body;

- a first memory and a second memory, the first memory storing a database of enrolled fingerprints and the second memory being a read only memory for storing an identification code for the transaction authentication card, the identification code serving to identify the card to an access control device;

- a processor for retrieving stored biometric data from the memory, the processor having a fingerprint-matching algorithm for comparing a biometric feature of a user with the stored biometric data, the processor reading a fingerprint pattern from the fingerprint sensor, the processor sending a signal to be transmitted;

- an encrypter for encrypted the signal to be transmitted;

- a radio frequency (RF) transmitter for transmitting the encrypted signal on a one-to-one validation of the fingerprint of the user, the RF transmitter capable of transmitting a first RF signal of a first frequency and a second RF signal of a second frequency, wherein the first frequency is between 100 KHz and 200 KHz and the second frequency is between 10 MHz and 20 MHz;

- an antenna coupled to the RF transmitter for transmitting the RF signal;

- a three color light emitting diode mounted on the body such that a first color indicates a first condition, a second color indicates a second condition, and a third color indicates a third condition; and

- an internal power supply for powering all circuitry with the card.

43. The transaction authentication card of Claim 42, wherein the body measures $3 \frac{3}{8}$ x $2 \frac{1}{8}$ x $\frac{3}{16}$ inches.
44. The transaction authentication card of Claim 42, wherein the first frequency is 13.56 MHz and the second frequency is 125 KHz.
45. The transaction authentication card of Claim 42, wherein the first frequency is 15.76 MHz and the second frequency is 129 KHz.
46. The transaction authentication card of Claim 44, wherein the antenna is a loop antenna.
47. The transaction authentication card of Claim 44, wherein the antenna is a telescopic antenna.